SEQUENCE LISTING

<110> James E. Galen
      University of Maryland

<120> USE OF CLY A HEMOLYSIN FOR EXCRETION OF
      PROTEINS

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atc gaa acc gca gat ggg gca tta gat ctt tat aac aaa tac ctc gac    96
Ile Glu Thr Ala Asp Gly Ala Leu Asp Leu Tyr Asn Lys Tyr Leu Asp
                20                  25                  30


cag gtc atc ccc tgg aag acc ttt gat gaa acc ata aaa gag tta agc   144
Gln Val Ile Pro Trp Lys Thr Phe Asp Glu Thr Ile Lys Glu Leu Ser
            35                  40                  45


cgt ttt aaa cag gag tac tcg cag gaa gct tct gtt tta gtt ggt gat   192
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Arg Phe Lys Gln Glu Tyr Ser Gln Glu Ala Ser Val Leu Val Gly Asp
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Ile Lys Val Leu Leu Met Asp Ser Gln Asp Lys Tyr Phe Glu Ala Thr
65                  70                  75                  80

caa act gtt tat gaa tgg tgt ggt gtc gtg acg caa tta ctc tca gcg    288
Gln Thr Val Tyr Glu Trp Cys Gly Val Val Thr Gln Leu Leu Ser Ala
                    85                  90                  95

tat att tta cta ttt gat gaa tat aat gag aaa aaa gca tca gcc cag    336
Tyr Ile Leu Leu Phe Asp Glu Tyr Asn Glu Lys Lys Ala Ser Ala Gln
                100                 105                 110

aaa gac att ctc att agg ata tta gat gat ggt gtc aag aaa ctg aat    384
Lys Asp Ile Leu Ile Arg Ile Leu Asp Asp Gly Val Lys Lys Leu Asn
                115                 120                 125

gaa gcg caa aaa tct ctc ctg aca agt tca caa agt ttc aac aac gct    432
Glu Ala Gln Lys Ser Leu Leu Thr Ser Ser Gln Ser Phe Asn Asn Ala
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tcc gga aaa ctg ctg gca tta gat agc cag tta act aat gat ttt tcg    480
Ser Gly Lys Leu Leu Ala Leu Asp Ser Gln Leu Thr Asn Asp Phe Ser
145                 150                 155                 160

gaa aaa agt agt tat ttc cag tca cag gtg gat aga att cgt aag gaa    528
Glu Lys Ser Ser Tyr Phe Gln Ser Gln Val Asp Arg Ile Arg Lys Glu
                165                 170                 175

gct tat gcc ggt gct gca gcc ggc ata gtc gcc ggt ccg ttt gga tta    576
Ala Tyr Ala Gly Ala Ala Ala Gly Ile Val Ala Gly Pro Phe Gly Leu
                180                 185                 190

att att tcc tat tct att gct gcg ggc gtg att gaa ggg aaa ttg att    624
Ile Ile Ser Tyr Ser Ile Ala Ala Gly Val Ile Glu Gly Lys Leu Ile
                195                 200                 205

cca gaa ttg aat aac agg cta aaa aca gtg caa aat ttc ttt act agc    672
Pro Glu Leu Asn Asn Arg Leu Lys Thr Val Gln Asn Phe Phe Thr Ser
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tta tca gct aca gtg aaa caa gcg aat aaa gat atc gat gcg gca aaa    720
Leu Ser Ala Thr Val Lys Gln Ala Asn Lys Asp Ile Asp Ala Ala Lys
225                 230                 235                 240

ttg aaa tta gcc act gaa ata gca gca att ggg gag ata aaa acg gaa    768
Leu Lys Leu Ala Thr Glu Ile Ala Ala Ile Gly Glu Ile Lys Thr Glu
                245                 250                 255

acc gaa aca acc aga ttc tac gtt gat tat gat gat tta atg ctt tct    816
Thr Glu Thr Thr Arg Phe Tyr Val Asp Tyr Asp Asp Leu Met Leu Ser
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Leu Leu Lys Gly Ala Ala Lys Lys Met Ile Asn Thr Cys Asn Glu Tyr
        275             280             285

caa caa cgt cat ggt aag aag acg ctt ttc gag gtt cct gac gtc gct    912
Gln Gln Arg His Gly Lys Lys Thr Leu Phe Glu Val Pro Asp Val Ala
        290             295             300

agt aaa gaa acg aac caa aag cca tat aag gaa aca tac ggc att tcc    960
Ser Lys Glu Thr Asn Gln Lys Pro Tyr Lys Glu Thr Tyr Gly Ile Ser
305             310             315             320

cat att aca cgc cat gat atg ctg caa atc cct gaa cag caa aaa aat   1008
His Ile Thr Arg His Asp Met Leu Gln Ile Pro Glu Gln Gln Lys Asn
            325             330             335

gaa aaa tat caa gtt cct gaa ttc gat tcg tcc aca att aaa aat atc   1056
Glu Lys Tyr Gln Val Pro Glu Phe Asp Ser Ser Thr Ile Lys Asn Ile
            340             345             350

tct tct gca aaa ggc ctg gac gtt tgg gac agc tgg cca tta caa aac   1104
Ser Ser Ala Lys Gly Leu Asp Val Trp Asp Ser Trp Pro Leu Gln Asn
        355             360             365

gct gac ggc act gtc gca aac tat cac ggc tac cac atc gtc ttt gca   1152
Ala Asp Gly Thr Val Ala Asn Tyr His Gly Tyr His Ile Val Phe Ala
        370             375             380

tta gcc gga gat cct aaa aat gcg gat gac aca tcg att tac atg ttc   1200
Leu Ala Gly Asp Pro Lys Asn Ala Asp Asp Thr Ser Ile Tyr Met Phe
385             390             395             400

tat caa aaa gtc ggc gaa act tct att gac agc tgg aaa aac gct ggc   1248
Tyr Gln Lys Val Gly Glu Thr Ser Ile Asp Ser Trp Lys Asn Ala Gly
            405             410             415

cgc gtc ttt aaa gac agc gac aaa ttc gat gca aat gat tct atc cta   1296
Arg Val Phe Lys Asp Ser Asp Lys Phe Asp Ala Asn Asp Ser Ile Leu
            420             425             430

aaa gac caa aca caa gaa tgg tca ggt tca gcc aca ttt aca tct gac   1344
Lys Asp Gln Thr Gln Glu Trp Ser Gly Ser Ala Thr Phe Thr Ser Asp
        435             440             445

gga aaa atc cgt tta ttc tac act gat ttc tcc ggt aaa cat tac ggc   1392
Gly Lys Ile Arg Leu Phe Tyr Thr Asp Phe Ser Gly Lys His Tyr Gly
        450             455             460

aaa caa aca ctg aca act gca caa gtt aac gta tca gca tca gac agc   1440
Lys Gln Thr Leu Thr Thr Ala Gln Val Asn Val Ser Ala Ser Asp Ser
465             470             475             480

tct ttg aac atc aac ggt gta gag gat tat aaa tca atc ttt gac ggt   1488
Ser Leu Asn Ile Asn Gly Val Glu Asp Tyr Lys Ser Ile Phe Asp Gly
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gac gga aaa acg tat caa aat gta cag cag ttc atc gat gaa ggc aac     1536
Asp Gly Lys Thr Tyr Gln Asn Val Gln Gln Phe Ile Asp Glu Gly Asn
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tac agc tca ggc gac aac cat acg ctg aga gat cct cac tac gta gaa     1584
Tyr Ser Ser Gly Asp Asn His Thr Leu Arg Asp Pro His Tyr Val Glu
            515                 520                 525

gat aaa ggc cac aaa tac tta gta ttt gaa gca aac act gga act gaa     1632
Asp Lys Gly His Lys Tyr Leu Val Phe Glu Ala Asn Thr Gly Thr Glu
            530                 535                 540

gat ggc tac caa ggc gaa gaa tct tta ttt aac aaa gca tac tat ggc     1680
Asp Gly Tyr Gln Gly Glu Glu Ser Leu Phe Asn Lys Ala Tyr Tyr Gly
545                 550                 555                 560

aaa agc aca tca ttc ttc cgt caa gaa agt caa aaa ctt ctg caa agc     1728
Lys Ser Thr Ser Phe Phe Arg Gln Glu Ser Gln Lys Leu Leu Gln Ser
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Asp Lys Lys Arg Thr Ala Glu Leu Ala Asn Gly Ala Leu Gly Met Ile
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gag cta aac gat gat tac aca ctg aaa aaa gtg atg aaa ccg ctg att     1824
Glu Leu Asn Asp Asp Tyr Thr Leu Lys Lys Val Met Lys Pro Leu Ile
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gca tct aac aca gta aca gat gaa att gaa cgc gcg aac gtc ttt aaa     1872
Ala Ser Asn Thr Val Thr Asp Glu Ile Glu Arg Ala Asn Val Phe Lys
            610                 615                 620

atg aac ggc aaa tgg tac ctg ttc act gac tcc cgc gga tca aaa atg     1920
Met Asn Gly Lys Trp Tyr Leu Phe Thr Asp Ser Arg Gly Ser Lys Met
625                 630                 635                 640

acg att gac ggc att acg tct aac gat att tac atg ctt ggt tat gtt     1968
Thr Ile Asp Gly Ile Thr Ser Asn Asp Ile Tyr Met Leu Gly Tyr Val
            645                 650                 655

tct aat tct tta act ggc cca tac aag ccg ctg aac aaa act ggc ctt     2016
Ser Asn Ser Leu Thr Gly Pro Tyr Lys Pro Leu Asn Lys Thr Gly Leu
            660                 665                 670

gtg tta aaa atg gat ctt gat cct aac gat gta acc ttt act tac tca     2064
Val Leu Lys Met Asp Leu Asp Pro Asn Asp Val Thr Phe Thr Tyr Ser
            675                 680                 685

cac ttc gct gta cct caa gcg aaa gga aac aat gtc gtg att aca agc     2112
His Phe Ala Val Pro Gln Ala Lys Gly Asn Asn Val Val Ile Thr Ser
            690                 695                 700

tat atg aca aac aga gga ttc tac gca gac aaa caa tca acg ttt gcg     2160
Tyr Met Thr Asn Arg Gly Phe Tyr Ala Asp Lys Gln Ser Thr Phe Ala
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gac agc atc ctt gaa caa gga caa tta aca gtt aac aaa tag tga         2253
Asp Ser Ile Leu Glu Gln Gly Gln Leu Thr Val Asn Lys  *   *
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